



## Editorial

### Telephone CPR: Adopting the standard of care, *Just-in-time*



Sudden, unexplained out-of-hospital cardiac arrest (OHCA) remains a significant public health problem effecting 350,000 victims in North America annually. Mortality from OHCA approaches 90% while the majority of those that survive have morbidity precluding independent living [1]. Recognition of OHCA with subsequent activation of emergency medical services (EMS) response and immediate, high-quality cardiopulmonary resuscitation (CPR) are the first two links in the chain of survival from OHCA [2,3]. While EMS is frequently accessed, most OHCA victims do not receive bystander CPR. Instead, they wait on average five minutes until professional EMS arrives [4].

The emergency medical dispatcher, or more appropriately telecommunicator, plays an essential role in confirming OHCA, ensuring the appropriate EMS response, and providing telephone CPR (TCPR) instructions with the location of the closest automated external defibrillator. Using a simple, two question algorithm, (Is the patient conscious? Is the patient breathing normally? No, No, Go!) skilled telecommunicators can provide TCPR instructions such that the first chest compression is delivered within seconds of the call for help [5]. TCPR instructions strengthen the link between recognition of OHCA and immediate high-quality CPR in the chain of survival.

The study presented in this issue of *Resuscitation* by Wu et al. underscores the impact TCPR can make on OHCA survival. Utilizing the existing Save Hearts in Arizona Registry and Education, or SHARE network, covering 80% of the 6.7 million residents of Arizona [6], investigators compared rates of survival and functional outcome among three distinct OHCA populations: 1) those receiving no CPR before EMS arrival, 2) those receiving bystander CPR before or without TCPR instructions, and 3) and those receiving chest compressions following TCPR instructions [7]. In an evaluation of 2310 patients, Wu et al. determined 32.8% received no CPR, 23.8% received bystander CPR, and 43.4% received compressions as a result of TCPR. Furthermore, patients receiving bystander CPR or TCPR were more than 50% more likely to achieve functional survival (OR 1.58 [95% CI 1.05, 2.39] and 1.56 [95% CI, 1.06, 2.31]) respectively. In short, TCPR nearly tripled the rate of CPR delivered before EMS arrival and doubled the chance of functional survival for OHCA victims in Arizona.

Detractors will suggest that this investigation simply demonstrates a predictable improvement in OHCA survival with the statewide adoption of best-practice in emergency medical dispatch. When TCPR was coupled with previously reported successes optimizing post-cardiac arrest hospital care at cardiac arrest receiving

centers (CRCs), the results reported by Wu et al. seem a foregone conclusion [8,9]. If TCPR improves bystander CPR rates [10] and bystander CPR doubles OHCA survival [11], then survival should logically follow the implementation of TCPR. While this criticism may be logically sound, it overlooks the critical operational details of TCPR [12] that demonstrate its unique contribution to the chain of survival.

Despite the intuitive impact of TCPR upon OHCA survival, less than half of the dispatch centers, or public safety answering points (PSAPs), in the United States routinely provide TCPR instructions. Of those PSAPs that do, only a minority provide instructions consistent with current guidelines or have any quality improvement program to monitor performance metrics [13]. The cost of providing and maintaining a TCPR program, the perception of PSAP scope of practice, liability, and public relations concerns are frequently cited as obstacles to TCPR implementation. These challenges can be overcome with formal medical direction and supervision as suggested by the National Association of Emergency Medical Services Physicians (NAEMSP) and the American Heart Association [14,15]. An active, engaged medical director can provide qualified and licensed oversight of emergency medical dispatch including TCPR and other medically relevant pre-arrival instructions. In addition, medical directors can educate local public officials, simultaneously addressing the misconception that TCPR is beyond the PSAP scope of practice and advocating for resources to implement and sustain TCPR. Furthermore, quality TCPR allays public relations exposure from media release of dispatch recordings by reassuring citizens that municipal resources are focused on saving lives. Life threatening injuries from inappropriately directed or incorrectly performed TCPR are quite rare [16]. Furthermore, all 50 states and the District of Columbia have Good Samaritan laws mitigating legal liability from mistakenly performed bystander CPR. The perceived risks to providing TCPR pale in comparison to the preventable deaths that OHCA causes in communities without it.

Survival from OHCA varies regionally in North America by as much as 500% [17]. In many disadvantaged communities, poor survival is exacerbated by low rates of bystander CPR [18]. While physical barriers to initiating bystander CPR may be insurmountable (i.e. bystander not able to move a OHCA victim to the floor to perform CPR) [19], Wu et al. demonstrate that other identified challenges may yield to trained telecommunicators providing quality TCPR instructions. These include bystanders having difficulty recognizing OHCA, expecting others to act, uncertainty or fear of how to correctly perform CPR, concern about the quality of CPR deliv-

ered, and the perceived need for mouth-to-mouth ventilation [20]. As demonstrated by Wu et al., each of these real-world challenges can be overcome by telecommunicators providing psychological support in conjunction with hands-only TCPR until professional EMS arrives.

Whether spontaneously or via TCPR coaching, every OHCA victim should have the benefit of bystander CPR prior to EMS arrival. Telecommunicators, as public safety personnel, must be trained and empowered to provide TCPR, ensuring that the initial links of the chain of survival are as strong as they can be. Wu et al. demonstrate why the single, most important strategy to improve bystander CPR [21], and thereby survival from OHCA, is for communities to embrace TCPR as the standard of care.

## Conflicts of interest

I serve as the Volunteer Chair of the Telephone CPR Task Force for the American Heart Association. The TCPR task force published program recommendations and quality metrics in April, 2017, available at [cpr.heart.org/telephonecpr](http://cpr.heart.org/telephonecpr).

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